

AMENDMENTS TO THE CLAIMS:

Kindly amend claims 1-9 and 11-19, as shown below.

This listing of claims will replace all prior versions and listings of claims in the Application:

Claim 1 (currently amended): A ~~constant~~ current circuit including a plurality of resistors formed on a semiconductor substrate, comprising:

a first current source for producing a first current of constant magnitude regardless of resistance variations which can occur uniformly in said plurality of resistors; and

a second current source for producing a second current [[of]] with a magnitude which [[is]] varies inversely variable with said resistance variations of said plurality of resistors,

said first and second current sources being connected to each other for producing an output current which is equal to a difference between said first and second currents.

Claim 2 (currently amended): The ~~constant~~ current circuit of claim 1, wherein said second current ~~is variable varies~~ depending on an base-emitter voltage of a transistor.

Claim 3 (currently amended): The ~~constant~~ current circuit of claim 1, wherein said second current ~~is variable varies~~ depending on a power-line voltage.

Claim 4 (currently amended): The ~~constant~~ current circuit of claim 1, wherein said second current source [[is]] includes a band-gap type constant current source.

Claim 5 (currently amended): A ~~constant~~ current circuit including a plurality of resistors formed on a semiconductor substrate, comprising:

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a first group of parallel first transistors having emitters connected via respective a first subset of said plurality of resistors to a voltage source and having collectors connected together to an output terminal;

a second group of parallel second transistors having emitters connected via respective a second subset of said plurality of resistors to said voltage source and having collectors connected to each other;

a constant current source connected between the collectors of said second group of second transistors and ground to produce a constant current, said first group of first transistors and second groups of group of second transistors having have bases connected together to form a current mirror, whereby a current equal to said constant current is drawn by said first group of first transistors to said output terminal; and

~~transistor resistor~~ current drawing circuitry for drawing a current inversely variable with uniform resistance variations of said semiconductor substrate from said output terminal to ground.

Claim 6 (currently amended): The ~~constant~~ current circuit of claim 5, wherein said ~~transistor resistor~~ current drawing circuitry comprises:

at least one third transistor having an emitter connected via [[a]] one resistor of said plurality of resistors to said voltage source and a collector connected to a circuit node, whereby a current whose magnitude is equal to $1/M$ of said constant current is drawn by at least one of said third ~~transistor~~ transistors to said circuit node, where M is the number of transistors provided in each of said first group of first transistors and said second groups of second transistors;

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a fourth transistor having a collector connected to said output terminal and an emitter connected to ground via [[a]] one resistor of said plurality of resistors, said fourth transistor having a base electrode connected to said circuit node; and

a fifth transistor having a collector connected to said circuit node and an emitter connected to ground via [[a]] one resistor of said plurality of resistors, said fifth transistor having a base electrode connected to the emitter of said fourth transistor.

Claim 7 (currently amended): The ~~constant~~ current circuit of claim 5, wherein said ~~transistor resistor current drawing~~ circuitry comprises:

a pair of resistors of said plurality of resistors connected in series between said voltage source and ground to form a circuit node therebetween; and

a third transistor having a collector connected to said output terminal and an emitter connected to ground via [[a]] one resistor of said plurality of resistors, said third transistor having a base electrode connected to said circuit node.

Claim 8 (currently amended): The ~~constant~~ current circuit of claim 5, wherein said ~~transistor resistor current drawing~~ circuitry comprises:

third and fourth transistors having emitters connected via ~~respective~~ a third subset of said plurality of resistors to said voltage source and having bases connected together to the bases of said first group of first transistors and said second groups of second transistors to produce from each of the third and fourth transistors a current whose magnitude is equal to $1/M$ of said constant current, where M is the number of transistors provided in each of said first group of first transistors and said second groups of second transistors;

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a group of fifth transistors having collectors connected together to the collector of said third transistor, having emitters connected together to ground through ~~a series-connected resistors~~ a series of a fourth subset of said plurality of resistors to ground and having bases connected to a first circuit node to which a collector of said fourth transistor is connected;

a sixth transistor having a collector and a base electrode connected together to said first circuit node and having an emitter connected to a second circuit node formed between said ~~series-connected~~ series of said fourth subset of resistors; and

a seventh transistor having a collector connected to said output terminal and an emitter connected to ground via [[a]] one resistor of said plurality of resistors and having a base electrode connected to said first circuit node.

Claim 9 (currently amended): An active filter circuit having a plurality of resistors formed on a semiconductor substrate, comprising:

a first current source for producing a first current of constant magnitude regardless of resistance variations which can occur uniformly in said plurality of resistors;

a second current source for producing a second current [[of]] with a magnitude which [[is]] varies inversely variable with said resistance variations of said plurality of resistors, said first and second current sources being connected to each other for producing an output current which is equal to a difference between said first and second currents; and

an active filter driven by said output current for filtering an input signal.

Claim 10 (original): The active filter circuit of claim 9, wherein said active filter is a low-pass filter.

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Claim 11 (currently amended): The active filter circuit of claim 9, wherein said active filter comprises:

a pair of switching circuits driven by said output current, said switching circuits alternately assuming a conducting state according to polarity of [[an]] said input signal applied thereto; and

~~resistor capacitor~~ output circuitry connected across said switching circuits to produce an output signal.

Claim 12 (currently amended): The active filter circuit of claim 9, wherein said second current is variable varies depending on [[an]] a base-emitter voltage of a transistor.

Claim 13 (currently amended): The active filter circuit of claim 9, wherein said second current is variable varies depending on a power-line voltage.

Claim 14 (currently amended): The active filter circuit of claim 9, wherein said second current source [[is]] includes a band-gap type constant current source.

Claim 15 (currently amended): An active filter circuit having a plurality of resistors formed on a semiconductor substrate, comprising:

a first group of parallel first transistors having emitters connected via respective a first subset of said plurality of resistors to a voltage source and having collectors connected together to an output terminal;

a second group of parallel second transistors having emitters connected via respective a second subset of said plurality of resistors to said voltage source and having collectors connected to each other;

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a constant current source connected between the collectors of said second group of parallel second transistors and ground to produce a constant current, said first group of first transistors and second groups of second transistors having bases connected together to form a current mirror, whereby a current equal to said constant current is drawn by said first group of transistors to said output terminal; and

~~transistor resistor current drawing~~ circuitry for drawing a current, which varies inversely variable with uniform resistance variations of said semiconductor substrate from said output terminal to ground;

a pair of switching circuits driven by said output current, said switching circuits alternately assuming a conducting state according to polarity of an input signal applied thereto; and

~~resistor capacitor output~~ circuitry connected across said switching circuits to produce an output signal.

Claim 16 (currently amended): The active filter circuit of claim 15, wherein one of said switching circuits comprises a first third transistor and a second fourth transistor connected in series between said voltage source and ground, and the other switching circuit comprises a third fifth transistor and a fourth sixth transistor connected in series between said voltage source and ground,

said first third and third fifth transistors having bases connected together to receive said output current, and said second fourth and fourth sixth ~~transistor~~ transistors connected to a pair of input terminals to which said input signal is applied,

wherein said ~~resistor capacitor output~~ circuitry comprises:

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[[a]] one resistor of said plurality of resistors connected between collectors of said first third and third fifth transistors; and

a capacitor connected between collectors of said second fourth and fourth sixth transistors for producing said output signal.

Claim 17 (currently amended): The active filter circuit of claim 15, wherein said transistor resistor current drawing circuitry comprises:

at least one third transistor having an emitter connected via [[a]] one resistor of said plurality of resistors to said voltage source and a collector connected to a circuit node, whereby a current whose magnitude is equal to $1/M$ of said constant current is drawn by at least one of said third transistor transistors to said circuit node, where M is the number of transistors provided in each of said first group of first transistors and said second groups of second transistors;

a fourth transistor having a collector connected to said output terminal and an emitter connected to ground via [[a]] one resistor of said plurality of resistors, said fourth transistor having a base electrode connected to said circuit node; and

a fifth transistor having a collector connected to said circuit node and an emitter connected to ground via [[a]] one resistor of said plurality of resistors, said fifth transistor having a base electrode connected to the emitter of said fourth transistor.

Claim 18 (currently amended): The active filter circuit of claim 15, wherein said transistor resistor current drawing circuitry comprises:

a pair of resistors of said plurality of resistors are connected in series between said voltage source and ground to form a circuit node therebetween; and

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a third transistor having a collector connected to said output terminal and an emitter connected to ground via [[a]] one resistor of said plurality of resistors, said third transistor having a base electrode connected to said circuit node.

Claim 19 (currently amended): The active filter circuit of claim 15, wherein said ~~transistor-resistor current drawing~~ circuitry comprises:

third and fourth transistors having emitters connected via ~~respective~~ a third subset of plurality of resistors to said voltage source and having bases connected together to the bases of said first group of first transistors and said second groups of second transistors to produce from each of the third and fourth transistors a current whose magnitude is equal to $1/M$ of said constant current, where M is the number of transistors provided in each of said first group of first transistors and said second groups of second transistors;

a group of fifth transistors having collectors connected together to the collector of said third transistor, having emitters connected together to ground through a ~~series-connected series of a fourth subset of said plurality of resistors~~ to ground and having bases connected to a first circuit node to which a collector of said fourth transistor is connected;

a sixth transistor having a collector and a base electrode connected together to said first circuit node and having an emitter connected to a second circuit node formed between said ~~series-connected series of said fourth subset of said plurality of resistors~~; and

a seventh transistor having a collector connected to said output terminal and an emitter connected to ground via [[a]] one resistor of said plurality of resistors and having a base electrode connected to said first circuit node.

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